What is claimed is:

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1. An adaptive system modeling method comprising:

selecting from a plurality of candidate features of a system a set of input features and a superset of the input features and other features by using a baseline significance signature;

generating a system model by using data corresponding to the selected input features set;

maintaining online data corresponding to the superset of the input features and other features collected from the system;

determining a new significance signature of the system by using the online superset data to perform a discriminant analysis of the candidate features; and

detecting an evolutionary change in the system by comparing the new significance signature and the baseline significance signature.

- The method of claim 1 further comprising selecting
 new input features by using the new significance signature.
 - 3. An adaptive system modeling method comprising:

determining a baseline significance signature of current behavior of a system by performing a discriminant analysis;

selecting from a plurality of candidate features a set of input features and a superset of the input features and other features by using the baseline significance signature;

generating a system model by using data corresponding to the selected input features set; and

maintaining online data corresponding to the superset of the input features and other features collected from the

system.

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4. The method of claim 3 further comprising:

evaluating an accuracy of predictions by the system model based on additional input features data;

determining a new significance signature of the system by performing another discriminant analysis of the candidate features, if the accuracy of the system model predictions is below a predetermined accuracy level; and

selecting new input features by using the new significance signature.

- 5. The method of claim 4, wherein the additional input features data is obtained from the online collection of data.
 - 6. An adaptive system modeling method comprising:

determining a baseline significance signature of current behavior of a system by using a decision tree methodology to perform a discriminant analysis;

selecting from a plurality of candidate features of a system a set of input features by using the baseline significance signature; and

generating a system model by using data corresponding to the selected input features set.

- 7. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform the method of claim 1.
- 8. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform the method of claim 3.

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- 9. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform the method of claim 6.
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- 10. A computer system, comprising:
- a processor; and
- a program storage device readable by the computer system, tangibly embodying a program of instructions executable by the processor to perform the method of claim 1.
 - 11. A computer system, comprising:
 - a processor; and
- a program storage device readable by the computer system, tangibly embodying a program of instructions executable by the processor to perform the method of claim 3.
- 20 12. A computer system, comprising:
 - a processor; and
 - a program storage device readable by the computer system, tangibly embodying a program of instructions executable by the processor to perform the method of claim 6
 - 13. A computer data signal embodied in a transmission medium which embodies instructions executable by a computer to perform the method of 1.

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14. A computer data signal embodied in a transmission medium which embodies instructions executable by a computer to perform the method of 3.

15. A computer data signal embodied in a transmission medium which embodies instructions executable by a computer to perform the method of 6.

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